

ART. XIV.—*The Present Position of the Snake-bite*

Controversy.

By JAMES W. BARRETT, M.D., M.S., F.R.C.S. Eng.

Demonstrator and Examiner in Physiology in the University of Melbourne.

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The public and the technical press have of late been occupied with discussions on the merit or demerit of the so-called strychnine cure for snake-bite, but as usual, very little definite evidence has been adduced. I have, therefore, thought it advisable to bring the facts of the case under the notice of the members of this Society, so that the position occupied by the rival disputants may be rendered perfectly clear. Dr. Mueller of Yackandandah, it seems, has satisfied himself that a theory respecting the action of snake poison has been proved. He believes that strychnia is consequently indicated as a remedy. When, however, he is asked to substantiate both these propositions, by showing that the treatment is successful, he has no further evidence to adduce than the report of cases of snake-bite, real or supposed, in which medical men assert that patients were saved from death by the injection of strychnine. Now, it is obvious that before reports of such cases can be of much value, it is necessary to ascertain the percentage of individuals who died from snake-bite when other modes of treatment were adopted. In other words, snake-bite is or is not a very fatal affection.

The object of this communication is to endeavour to make answer to that question. In investigating it, I have had

extensive recourse to tables, furnished to me by the ever obliging Government Statist, Mr. Hayter.

Table I, which follows, shows the deaths which have taken place from snake and insect bite (for the two are bracketed in returns together) in the Australian colonies during the decade 1881-1890. In accordance with the foot-note appended to this table, I have rejected from further consideration any deaths occurring in other colonies than Victoria, New South Wales, and Queensland. You will further note that of the total 125 deaths which occurred in these three colonies in the period mentioned, at least 5 or 6 are obviously due to bites of other animals than snakes. There is the further probability that some of the deaths have been caused by the enthusiastic administration of alcohol to persons bitten or supposed to be bitten. However, to be well within the mark, I assume that 125 deaths represent fatal cases of snake-bite, and proceed to deal with them accordingly.

TABLE I.

*Deaths from Snake and Insect-bite in the Australian Colonies,
1881 to 1890.*

YEARS.	Victoria.*	N. S. Wales.	Queens-land.	South Australia†	West Australia†	Tasmania†	Total.
1881	5	5	5	..	..	1	16
1882	5	.	3	..	1	1	10
1883	2	4	..	..	..	1	7
1884	3	8	..	..	..	..	11
1885	3	3	3	..	1	..	10
1886	4	5	..	..	..	..	9
1887	9‡	3	8	..	..	1	21
1888	3	5	4	..	..	..	12
1889	2	4	11	1	..	..	18
1890	2	10	6	1	..	..	19
Total	38	47	40	2	2	4	133

NOTE.—There are no deaths from snake-bite in New Zealand.

In Victoria, in 1891, there were 5 deaths from snake-bite, and 1 from iguana-bite.

* In other years than 1881 and 1882, no distinction was regularly made in Victoria between snake and insect-bites. Two of the deaths in the former year, and 1 in the latter, were from insect-bite.

† In the case of these colonies, it is not certain whether there were any deaths in several of the years, as the cause was not specifically mentioned in the list of causes of death.

‡ One of these is distinguished as "vermin-bite" and 1 "insect-bite."

It will be seen that in this period, in the three colonies, snakes were unable to kill more than 125 persons.

In order to determine the relative frequency of death from snake-bite, I next append a table showing the population (actual and average) of the colonies during the same period.

TABLE II.

Mean Populations of the Australasian Colonies, 1881 to 1890.

YEAR.	Victoria.	N. S. Wales.	Queensland.	South Australia.	West Australia.	Tasmania.	New Zealand.*	Total Australasia.
1881	868,942	765,015	226,522	276,948	29,516	116,437	492,887	2,776,262
1882	889,720	798,540	237,611	289,916	30,389	119,473	509,308	2,874,957
1883	910,130	838,155	267,865	299,012	31,233	122,242	529,292	2,997,929
1884	932,630	883,145	294,782	308,648	32,329	125,352	548,993	3,125,879
1885	956,880	927,275	308,789	313,102	34,072	128,160	566,168	3,234,446
1886	981,860	969,455	327,034	311,254	37,184	130,441	582,306	3,342,735
1887	1,016,750	1,004,835	346,545	311,050	41,699	133,802	596,373	3,450,391
1888	1,054,980	1,035,705	361,230	312,253	42,312	137,167	605,370	3,549,017
1889	1,090,350	1,066,450	374,240	313,751	43,653	140,261	611,716	3,639,685
1890	1,118,500	1,101,840	385,805	316,425	47,950	143,733	620,780	3,734,685
Average	982,374	939,041	313,042	305,235	36,973	129,706	566,319	3,272,599

* Exclusive of Maoris.

Therefore, the proportion of fatal cases of snake-bite to the average number of persons alive during the period is shown by the following table, which gives:—

TABLE III.

The Ratio of Deaths from Snake-bite in each Colony during the Decade to the average Population.

Victoria	-	-	-	-	1	to	25,852
New South Wales	-	-	-	-	1	to	19,980
Queensland	-	-	-	-	1	to	7,826
Average	-	-	-	-	1	to	17,886

The death-rate from snake-bite in Queensland seems very much higher than in the other two colonies. The following

table will, however, show the danger of drawing rash conclusions from figures:—

TABLE IV.

Deaths from Violence in the Australian Colonies, 1881 to 1890.

YEARS.	Victoria.	N. S. Wales.	Queensland.	South Australia.	West Australia.	Tasmania.	New Zealand.	Total.
1881	849	906	317	233	36	105	459	2,905
1882	841	904	439	210	53	88	505	3,040
1883	908	850	396	202	59	106	494	3,015
1884	799	990	509	239	51	90	548	3,226
1885	846	1,106	492	212	45	92	517	3,310
1886	942	1,083	496	272	67	94	571	3,525
1887	1,023	1,148	599	229	57	112	555	3,723
1888	1,119	1,140	593	234	90	118	513	3,807
1889	1,186	1,110	622	293	44	144	508	3,822
1890	1,165	1,163	737	238	43	138	521	4,005
Total	9,678	10,400	5,200	2,277	545	1,087	5,191	34,378

TABLE V.

The Ratio of the Total Deaths from Snake-bite during the Decade to the Total Deaths from Violence.

Victoria	-	-	-	-	-	1 to 254.7
New South Wales	-	-	-	-	-	1 to 221.3
Queensland	-	-	-	-	-	1 to 130
Average	-	-	-	-	-	1 to 202

The following table shows the ratio of the total deaths from violence during the decade to the average population:—

TABLE VI.

Victoria	-	-	-	-	-	1 to 101.5
New South Wales	-	-	-	-	-	1 to 90.3
Queensland	-	-	-	-	-	1 to 61.2
Average	-	-	-	-	-	1 to 84.3

It will thus be seen that although the ratio of deaths from snake-bite to the average population, and also to the total deaths from violence, is higher in Queensland than in the other two colonies, the ratio of deaths from violence to the average population is also higher. Consequently it is unsafe to infer, from the evidence furnished, that snake-bite is necessarily a more fatal affection in Queensland than in the other colonies.

From this mass of figures we arrive at a general conclusion that snake-bite is one of the most insignificant causes of death in our midst. For example, in the three years 1887-88-89 more persons died in Victoria from hydatid disease than were killed by snakes in Australia during the decade. Anyone who cares to look through Mr. Hayter's tables will find that the snake-bite contribution is a very small one.

In 1876, a Committee was appointed by the Medical Society of Victoria which experimented in a methodical way. The Committee consisted of Drs. M'Crea (Chairman), T. M. Girdlestone, E. Barker, J. E. Neild, A. Bowen, P. Smith, J. T. Dempster, and Professor J. D. Kirkland. The particular value of the work done by this Committee lay in the fact that it found, with antidotes then in use, the recovery of a dog from snake virus injected hypodermically was chiefly a matter of dosage. None of the dogs used recovered when half a grain of fresh liquid poison was injected. They further found that tiger snakes 3 ft. to 4 ft. long injected on an average from 1 to 1½ grains of liquid poison, a quantity believed by analogy to be barely sufficient to kill a man. One grain of tiger snake venom, if injected fairly into the skin, would be approximately a dangerous dose. It is, however, quite possible that a snake driving its fangs through the skin finds it difficult to administer the full dose. If the snake bites through clothing, the chances of a fatal issue are diminished. On the other hand, in the case of some of the Indian snakes, allied in character to the Australian black and tiger snake, the dose of poison injected amounts to from 10 to 13 grains. Comment is needless.

Furthermore, Dr. M'Crea, in 1876, forwarded a circular to a number of medical practitioners asking them for information on the subject of snake-bite. In answer, he found that 253 cases of snake-bite had occurred in the practice of a number of medical practitioners, and that of these only 25, or 10 per cent., terminated fatally. Various methods of treatment had been adopted.

It seems, therefore, that fatal results from snake-bite are not common, and can scarcely take place unless the conditions are favourable to the snake. Nevertheless, if snake-bite were responsible for only one death in the decade, one would hail with pleasure the remedy which would obviate the repetition of such an accident; and my object in referring to these figures is not to under-rate the value of any remedy.

but to show the difficulty of being accurate in forming conclusions respecting its value.

These facts are so well-known that I must apologise for restating them. I have mentioned them in outline simply as part of the argument. In fact, if the name of other remedies used in the past be excised from old reports in the Journal, and the word strychnia be substituted, the description would parallel the present accounts of the efficacy of strychnia.

If, then, a discoverer of a snake-bite antidote has to refer to mortality tables as a proof of its success, he has a small margin to work on. He is dealing with a disease which is not usually intractable.

The public reports of cases may be referred to as evidence of its value, but apart from preceding facts altogether, I would ask anyone who is inclined to attach any value to such statements to think for a moment what they mean. Men, women, or children of different physiological resistance and vigour bitten, or supposed to be bitten, by snakes of different age, biological characters, and virus-producing capacity, the punctures made into skins of different thickness and in different parts of the body—treatment of various kinds adopted. Are there here not enough variables to cause grave doubt as to the value of a new variable introduced in the form of strychnia? Again, public reports of cases have been held to prove such extraordinary theories in medical history that one may be pardoned for receiving them with great caution. As stated, other remedies for snake-bite have been similarly commended at the hands of their demonstrators in the columns of the *Australian Medical Journal*.

There is one method by which the value of strychnia as a remedy may be settled, viz., by resort to experiments on animals on which the action of snake poison does not to all appearances differ materially from that in the case of man. From this, however, Dr. Mueller dissents, though he refers to experiments made on animals in support of his theory.

The evidence adduced serves to show that there is no warrant for believing strychnia to be of any value as an antidote for snake-bite; but there is no warrant for asserting that it is valueless. By the experimental method alone, can the vexed question be settled.
